Notch Inhibition Prevents Differentiation of Human Limbal Stem/Progenitor Cells in vitro.

Journal: Sci Rep

Publication Year: 2019

Authors: Sheyla Gonzalez, Heui Uhm, Sophie X Deng

PubMed link: 31316119

Funding Grants: Regeneration of Functional Human Corneal Epithelial Progenitor Cells, Regeneration of Functional Human Corneal Epithelial Progenitor Cells, Regeneration of a Normal Corneal Surface by Limbal Stem Cell Therapy

Public Summary:
Notch signaling has been shown to regulate the homeostasis and wound healing of the corneal epithelium. We investigated the effect of Notch inhibition in the human limbal stem/progenitor cells (LSCs) in vitro by using small molecules. Treatment of the LSCs with DAPT and SAHM1 reduced the proliferation rate and maintained the undifferentiated state of the LSCs in a concentration dependent manner. Stratification and differentiation of the corneal epithelium were not reduced after Notch inhibition, indicating that the function of the corneal basal cells is retained. Our findings suggest that Notch signaling plays a role in the proliferation and maintenance of LSCs.

Scientific Abstract:
Notch signaling has been shown to regulate the homeostasis and wound healing of the corneal epithelium. We investigated the effect of Notch inhibition in the human limbal stem/progenitor cells (LSCs) in vitro by using small molecules. Treatment of the LSCs with DAPT and SAHM1 reduced the proliferation rate and maintained the undifferentiated state of the LSCs in a concentration dependent manner. Stratification and differentiation of the corneal epithelium were not reduced after Notch inhibition, indicating that the function of the corneal basal cells is retained. Our findings suggest that Notch signaling plays a role in the proliferation and maintenance of LSCs.